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BURR-KNOT AND STEM-TUMOUR OF APPLE AND QUINCE TREES.

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Qlinces and some varieties of apple trees are subject to unsightly wart-like swellings on their branches and stems. These swellings can be roughly divided into two types—

1. *Burr-knot.*—Rough wart-like areas projecting up to about ¾ inch beyond the surface of the stem. The surface of the knots i covered with a compact mass of small rounded projections.

2. *Stem-tumour.*—The wart-like swellings are smooth on the younger growths but eventually become broken and rough on the surface. These tumours carry smaller swellings on their surfaces.

Burr-knots are found on quinces and some apples, particularly Northern Spy. They are formed laterally on the branches though several may fuse together to form a rough enlargement surrounding a branch.

Stem-tumours are usually developed in the same way as burr-knots. In the Dunns apple, however, they frequently originate in general club-like swellings of, rather than on the side of, the branches. They are particularly liable to develop on old spurs, where branches fork, and around dormant buds. In stem-tumours the small rounded projections may be noted on old broken tumours but they are scattered singly or in small aggregations over the tumour instead of occupying the whole surface as in burr-knots.

Examination of both types shows that they have their origin in the development of aerial or adventitious rootlets. These rootlets form the rounded projections on the rough surfaces. They are developed, make a little growth, become dormant and finally die. The annual production of new rootlets causes the knots and tumours to become larger until they form irregular swellings upwards of six inches in diameter.

If cuttings with knots or tumours are planted in moist ground in the spring they root readily.

On Northern Spy stocks it is common to find masses of fibrous roots developed near the ground level. These have their origin in burr-knots. Throwing up soil against the stems in the spring will induce a greater development of these hairy roots.

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Though unsightly in appearance there is no evidence that the knots or tumours on the branches or the development of fibrous roots around the bases of Northern Spy stocks in any way affect the growth or cropping of the

1. Stem-tumours on young wood of Dunns apple.

trees. It is probable that the bad effects sometimes attributed to the fibrous aerial roots on Northern Spy stocks are really due to unsuitable soil conditions for normal rooting which induce a greater development of the aerial roots.

2. Stem-tumours on old wood of Dunns apple.

The formation of burr-knots or stem-tumours is a varietal characteristic. Swingle, in the United States, after examining many varieties of apples, nearly 50 per cent. of which showed some tendency to knot or tumour formation, came to the conclusion that many varieties no longer grown commercially had been abandoned because of this tendency. Besides being unsightly these formations were formerly attributed to a bacterial disease known as Crown Gall, and particularly to that form of it known as Hairy Root. This opinion still has supporters in Australia in regard to the fibrous roots of Northern Spy. However, bacterial Hairy Root of any apple variety has been demonstrated in only very few cases in Australia and is probably rare.

The principal objection to the knots is that they form attractive harbourage for Woolly Aphis and Red Mite.

Summary.

1. The tendency to produce burr-knots or stem-tumours is a varietal characteristic of quinces and some varieties of apples.
2. The knots or tumours are associated with the development of dormant aerial rootlets.

3. Stem-tumour showing tips of dormant roots.

3. There is no evidence that burr-knots or stem-tumours have any detrimental effect on the growth or cropping of apple and quince trees.

References.

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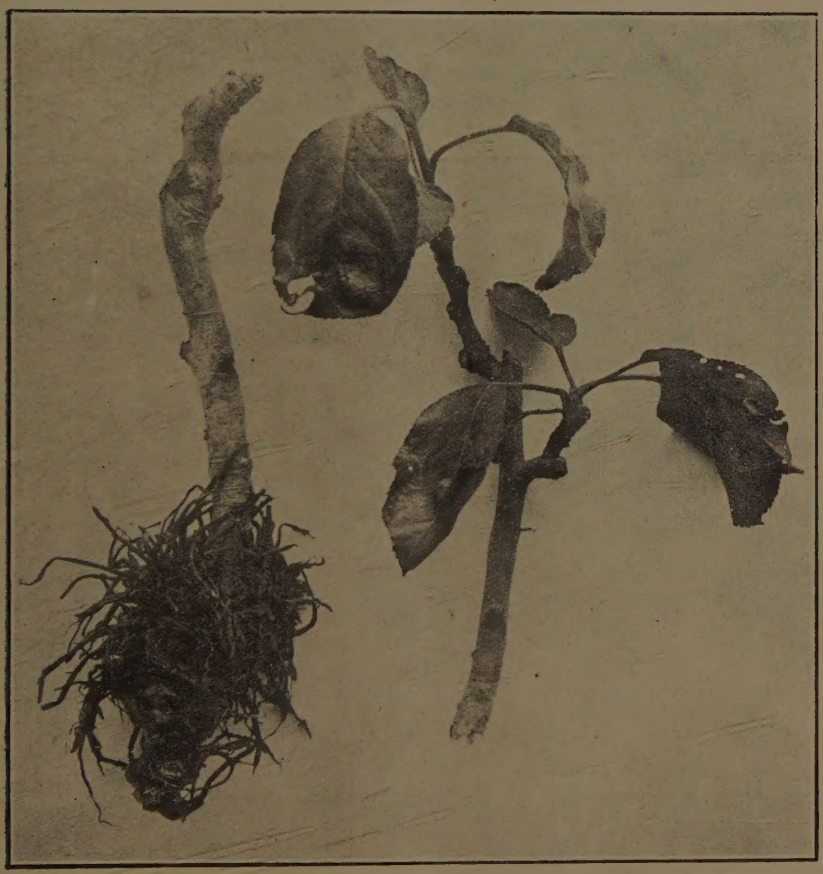

4. Apple cutting rooting from stem-tumour. Planted in moist soil in August and photographed in December, 1927. Cutting divided for convenience in photographing.

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